

New Taxa of Signal Flies (Diptera: Platystomatidae) of New Caledonia

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ABSTRACT. Possible explanations are sought for the distribution patterns of platystomatid genera in Pacific Oceania, with special reference to those of New Caledonia. A key to the eleven known genera of New Caledonia (including the Loyalty Islands) is given. Five of these genera are endemic to this province of the Australasian Region. A key to the known Australasian species of *Naupoda* is given. *Dayomyia molens* n.gen. and n.sp., *Eumeka koghii* n.sp., *Pogonortalis monteithi* n.sp., *Sors wrightae* n.gen. and n.sp., and *Naupoda (Gonga) burwelli* n.sp. are described from New Caledonia (Grande Terre). Abrasion of part of the antenna in *D. molens* is apparently due to some unexplained behavioural trait.

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Introduction

New Caledonia has a rich fauna of Platystomatidae for such a small and isolated group of islands, and has a high rate of endemism. Ongoing incomplete studies show the presence of at least eleven genera and 47 species. *Lamprogaster* Macquart and *Signa* McAlpine are the genera with the largest representation, but only one New Caledonian species of each is yet described. This paper, dealing with five small, apparently uncommon genera, foreshadows further work on this fauna. The number of available specimens of each new species is small, and recent focused field work by colleagues (2006) has failed to bring to light any more material of these. However, the novel status of the species is not in doubt, and I believe that the two new genera are well founded.

Methods

Morphological terms are those used by me previously (McAlpine 1973). Paired bristles and other structures are described in the singular, except where the context makes this inappropriate. The antenna is treated as a six-segmented appendage and segments are numbered from the base. Segments 4 to 6 constitute the arista. Cell-4 index is defined as the ratio of the length of the antepenultimate section of vein 4 to the full length of the discal cell along vein 4. Width of mesoscutum is measured across the notopleural calli.

The following collectors names are abbreviated to the initials: C.J. Burwell, N.L. Krauss, G.B. Monteith, J. Wright, S.G. Wright, C. Yoshimoto.

The following abbreviations refer to institutions housing specimens:

- AM Australian Museum, Sydney;
- BPB Bernice P. Bishop Museum, Honolulu;
- PM Muséum national d’Histoire naturelle, Paris;
- QM Queensland Museum, Brisbane.

Geographic distribution

Previously (McAlpine, 2001) I referred to New Caledonia as a biogeographic province of the Australasian Region. For the purposes of this paper, I use the terms Grande Terre (main island with its little known small satellites) and Loyalty Islands (les Loyauté) to designate the two principal sub-provinces. This overcomes the dual use of the term New Caledonia for both the province and one of its sub-provinces. So far I have seen no platystomatids from Isle of Pines, a potential third sub-province. Otherwise delimitation of biogeographic provinces is as given by McAlpine (2001).

The following twelve genera of Platystomatidae are restricted to the smaller islands of the Pacific Ocean: *Apactoneura* Malloch, *Apiola* McAlpine, *Montrouzierea* Bigot, *Dayomyia* n.gen., *Par* McAlpine, *Phlyax* McAlpine, *Pseudorichardia* Hendel, *Signa* McAlpine, *Sors* n.gen., *Tarfa* McAlpine, *Terzia* McAlpine, an unnamed Fijian genus. These are without representation on any larger land masses bordering the Pacific, such as Asia, Australia, the Philippines, the major Indonesian islands, New Guinea, and the Americas. The pattern of world distribution of

platystomatid taxa indicates a probable origin of these Pacific taxa ultimately from those lands on the western rim of the Pacific Ocean. The platystomatid fauna of the Americas is too meagre and derived to allow the probability of its having contributed significantly to the Pacific Island fauna, and has no degree of continuity with this fauna unless it be in the almost cosmopolitan genus *Rivellia* Robineau-Desvoidy. On the other hand, the major land masses on the western edge of the Pacific have a very diverse platystomatid fauna, and the initially rich fauna of their nearer islands (especially in the tropics) shows a marked but irregular diminution towards the more remote eastern islands. This tendency is seen in the numbers of genera present in the various provinces of the Pacific tropics listed by McAlpine (2001). Among these are: New Guinea—30 genera (emended since 2001), Bismarck Archipelago—18 genera, Solomon Archipelago—14 genera, New Caledonia—11 genera (here emended), Fiji—5 genera, tropical Polynesia—6 genera (the last including: Samoan Islands—6 genera, French Polynesia—2 genera, Hawaiian Islands—one genus). Of these provinces, New Caledonia has the largest proportion of its genera endemic—five of the eleven genera or 45%, if generic status be maintained for *Montrouzierea* Bigot. The other four endemic genera are *Dayomyia* n.gen., *Signa* McAlpine, *Sors* n.gen. and *Tarfa* McAlpine.

The platystomatids of the Loyalty Islands are poorly known and collected. Nevertheless, these islands have two apparently endemic genera: *Montrouzierea* on Lifou and *Tarfa* on Ouvéa. The most speciose genera of Grande Terre, *Lamprogaster* and *Signa*, are not recorded for the Loyalty Islands.

Key to New Caledonian genera of Platystomatidae

- 1 Vein 2 with conspicuous bend near mid-length; arista bipectinate, with a series each of long dorsal and ventral rays; scutellum brown with u-shaped yellowish marginal stripe; sternopleural bristle large *Scholastes* Loew
- Vein 2 without bend near mid-length; arista with pubescence only or nearly bare; scutellum without yellowish marginal stripe; sternopleural bristle usually absent (present but small in some *Naupoda*) 2
- 2 Facial carina well developed, flat-topped, with abruptly precipitous sides; squama large, its area much greater than that of axillary lobe; fore femur usually with posteroventral bristles poorly differentiated or absent 3
- Facial carina reduced, or rounded at sides, or very narrow and hidden in concavity in profile; squama variably developed, but not much larger in area than axillary lobe (except in *Naupoda*); fore femur with a series of well-developed posteroventral bristles (except in *Tarfa*) 4

- 3 One fronto-orbital bristle large, about as long as outer vertical bristle; arista with numerous moderately short hairs on almost entire length; penultimate section of vein 4 no longer than anterior crossvein *Montrouziera* Bigot
 — Fronto-orbital bristles vestigial or absent; arista haired only on basal part; penultimate section of vein 4 usually much longer than anterior crossvein (one exceptional sp.) *Lamprogaster* Macquart
- 4 Second section of vein 4 more than twice as long as third (penultimate) section 5
 — Second section of vein 4 less than twice as long as third section 7
- 5 Scutellum with numerous dorsal setulae; mesoscutum broader than long; first basal cell at level of basal crossvein much narrower than discal cell at same level *Sors* n.gen.
 — Scutellum without setulae, with only the major bristles; mesoscutum slightly longer than broad; first basal cell at level of basal crossvein not narrower than discal cell at same level 6
- 6 The following bristles all present: inner vertical, fronto-orbital, humeral, anterior notopleural, postalar, mesopleural, three pairs of scutellars; second basal cell less than 0.6 as long as discal cell; abdominal tergite 4 and often other tergites with zones of dense, paint-like white pruinescence *Eumeka* McAlpine
 — The above-listed bristles all absent, except for one pair of scutellars; second basal cell at least 0.8 as long as discal cell; abdominal tergites 3 to 5 entirely shining black *Dayomyia* n.gen.
- 7 Scutellar bristles (two pairs) all inserted within posterior fifth of length of scutellum; scutellum with many lateral (as well as dorsal) setulae; second basal cell, measured along vein 5, about as long as discal cell and much larger in area than anal cell; female: abdominal tergites 4 and 5 vestigial or absent *Naupoda* Osten Sacken
 — Scutellum with pair of lateral bristles before mid length, without setulae on lateral surface; second basal cell, measured along vein 5, much shorter than discal cell, not of noticeably greater area than anal cell; female: abdominal tergites 4 and 5 well developed 8
- 8 Vein 2, on at least its distal half, running very close to costa; fore femur without posteroventral bristles *Tarfa* McAlpine
 — Vein 2 not much approximated to costa before its distal end; fore femur with a series of posteroventral bristles 9
- 9 Second section of vein 4 shorter than first section and than third section; first basal cell entirely covered by blackish mark, without hyaline zones; scutellum without setulae; hind femur with short longitudinal anteroventral ridge at c. distal third of length *Pogonortalis* Hendel
 — Second section of vein 4 longer than first section, not shorter than third section; first basal cell not entirely blackish; scutellum generally with setulae; hind femur without such anteroventral ridge 10
- 10 Veins 3 and 4 not apically convergent; second section of vein 4 markedly concavely curved; section of costa on subcostal cell subequal in length to that on second costal cell *Rivellia* Robineau-Desvoidy
 — Vein 4 at least slightly curved forward apically to converge with vein 3; second section of vein 4 nearly straight or slightly arched; section of costa on subcostal cell much longer than that on second costal cell *Signa* McAlpine

***Dayomyia* n.gen.**

Type species *D. molens* n.sp.

Description. Male (female unknown). Medium-sized dark flies of moderate to rather stout build with partly infuscated wing.

Head. Parafacial broad; face deeply and extensively concave, so that median facial carina is not visible in profile; outer vertical bristle situated behind and below vertex; no other cephalic bristles differentiated from scattered fine setulae. Antenna of moderate proportions for Platystomatinae, with large, elongate segment 3; arista with minute pubescence less than 0.2 of its maximum diameter in length. Prelabrum reduced, flattened on ventral surface of head (perhaps sexually dimorphic).

Thorax with *only* the following major bristles differentiated: long posterior notopleural, one small dorsocentral, apical scutellar. Legs of moderate length; femora not incrassate; fore femur (but not other femora) with spinescent posteroventral bristles. Wing: stem vein (base of R) setulose dorsally only beyond level of humeral crossvein; veins 3 and 4 not strongly convergent towards apex; anterior crossvein meeting vein 4 well beyond mid-length of discal cell; alula moderately large; squama (lower calypter) forming moderately short lobe, no larger than axillary lobe (upper calypter).

Abdomen broadly ovate. Aedeagus of basic platystomatine structure, with pair of short terminal filaments.

Distribution New Caledonia: far north of Grande Terre.

Notes

The great reduction in chaetotaxy sets *Dayomyia* apart from most other platystomatid genera. The nearest approach to this condition is in *Angitula* Walker, but that genus and its probable sister-group *Terzia* McAlpine form a distinctive clade unlikely to be closely related to *Dayomyia*. *Dayomyia* is distinguished from *Angitula* s.l. by the robust habitus and relatively stout legs, by the short, unmodified prothorax, the extensive covering of many short setulae on the mesoscutum, the absence of the metathoracic postcoxal bridge, and the large alula. The resemblance in chaetotaxy is due to convergence.

The wing venation of *Dayomyia* shows points of resemblance to *Brea* Walker and *Pseudorichardia* Hendel, particularly in the unusually long second basal and anal cells, and there is some resemblance in general features of wing pattern. The course of the subcosta distally is more like that of *Brea*, but I am unable to find enough distinctive character states on which to base a hypothesis of close relationship.

Several features of *Dayomyia* suggest relationship to *Rhytidortalis* Hendel and through this genus to possibly related genera such as *Microepicausta* Hendel and *Scotinosoma* Loew. In the antenna, the strong armature of setulae on the dorsomedial surface of segment 2, and the bulky segment 3 with dorsal convexity basad of the insertion of the arista are reminiscent of males of *Rhytidortalis averni* McAlpine and some other *Rhytidortalis* species (see

McAlpine, 2000). These characters are all subject to sexual dimorphism in at least some *Rhytidortalis* species, but female conditions in *Dayomyia* are unknown. The extent of the basal swelling of antennal segment 6 in *Dayomyia* is more like that of *Rhytidortalis* than that of *Brea* and *Pseudorichardia*, as is the minute *decumbent* pubescence towards the base of that segment. The males of *R. averni* and to some extent those of other *Rhytidortalis* species have the prelabrum reduced in depth and its anterior surface receding, a condition approaching that of *D. molens*. The males of *Brea* and *Pseudorichardia* do not have the prelabrum thus reduced. The aedeagus of *Dayomyia* resembles that of *Rhytidortalis*, but is of such a generalized type for the Platystomatinae that no particular synapomorphy can be inferred. *Dayomyia* shows substantial difference from *Rhytidortalis* in venation, chaetotaxy, and facial structure, but these differences mostly involve autapomorphies for the former.

From these observations I put forward the hypothesis of closer relationship of *Dayomyia* to *Rhytidortalis* and related genera than to other (or most other) platystomatine genera, but this view cannot, without further knowledge, be based on well supported synapomorphies, uniquely derived within the Platystomatinae.

The generic name refers to Barry James Day who, over many years, has made significant collections of Diptera, including many new taxa, for the Australian Museum. Most recently these have included New Caledonian platystomatids. The generic name is treated as a feminine noun in the nominative case.

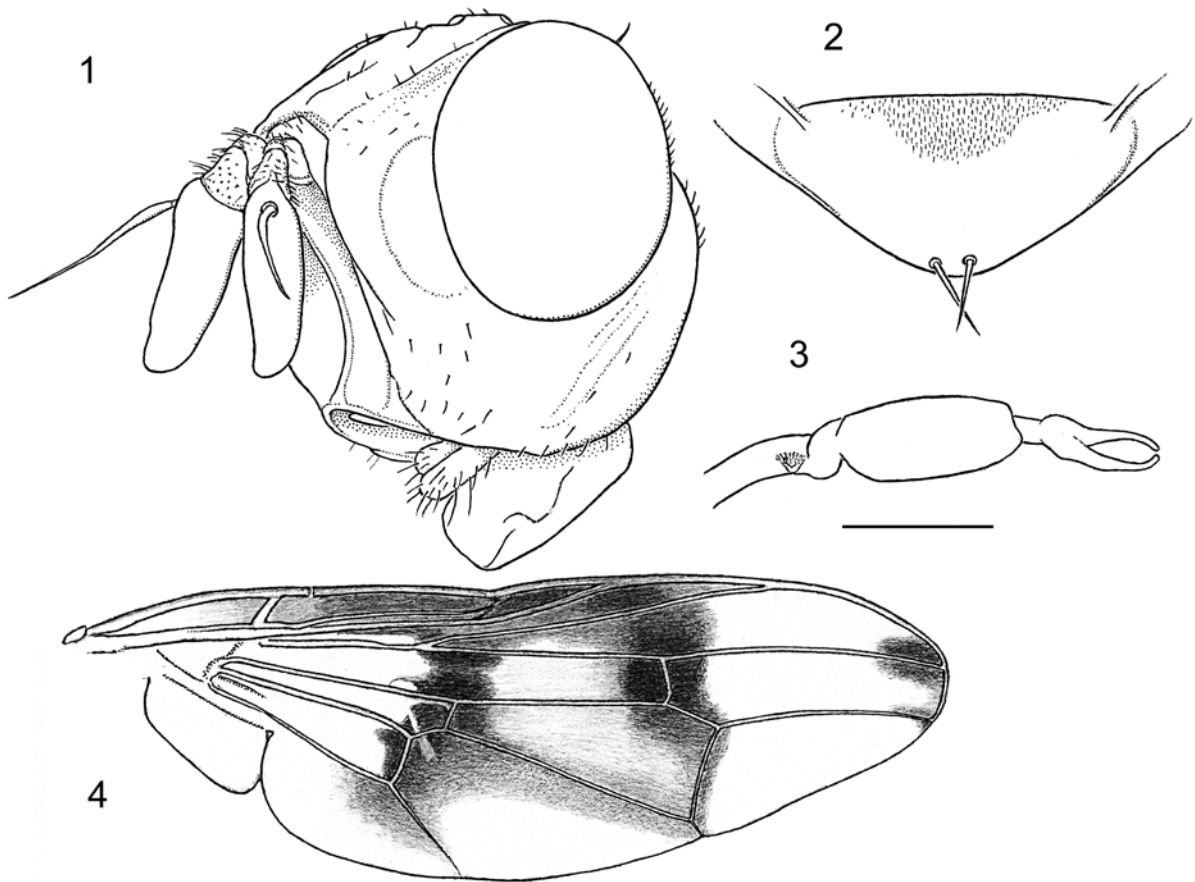
***Dayomyia molens* n.sp.**

Figs 1–4

Types. HOLOTYPE ♂, New Caledonia: 1 km SW of Mandjelia, 750 m, 20°24'S 164°32'E, 5.i.2005, G.B.M, MV light, rainforest (PM). PARATYPE ♂, Mandjelia—lower creek, 580 m, 20°24'S 164°31'E, 4.i.2005, G.B.M. (QM).

Description. Male.

Coloration. Head predominantly tawny-brown; cuticle largely pruinulent or finely sculptured and not shining; parafacial with zone of coarser, dense whitish pruinescence next to eye; face densely white-pruinulent except along summit of median carina and on lower margin; postgenal region and part of occiput with coarse greyish pruinescence. Antenna orange-tawny. Thorax black, largely shining; mesoscutum with small lateral marginal zone of yellowish-grey pruinescence both before and behind notopleural bristle, former extending mesad of humeral callus; posterior parts of pleura and much of postscutellum greyish-pruinulent. Legs largely black to brown-black; apices of all femora and bases of all tibiae narrowly tawny. Wing with brown markings partly diffuse as in Fig. 4; much of membrane on central and basal part of wing suffused with yellow; axillary lobe and squama creamy-white. Halter yellow. Abdomen black; tergites largely shining and with bluish reflections, except for a transverse stripe of grey-brown pruinescence near junction of tergites 1 and 2; sternite 1 largely glossy blackish, with grey-pruinulent zone on each lateral margin.



Figs 1–4. *Dayomyia molens*. (1) Head. (2) Scutellum, dorsal view. (3) Distal part of aedeagus, scale = 0.2 mm. (4) Wing.

Head as wide as mesoscutum and c. 1.3× as wide as high; postfrons narrowest near vertex, where its width is c. 0.4 that of head, rather sparsely finely setulose; parafacial without setulae except towards upper and lower extremities; frontal lunule shortly exposed, with few fine setulae; facial carina extending for almost full height of face, very narrow, but slightly dilated at lower extremity; cheek almost half as high as eye; occiput flattened on c. upper third, strongly swollen on rest of extent except for central depression containing occipital foramen. Antenna: segment 1 short, but prominent in profile; segment 2 moderately short, with many setulae, including field of numerous short, stout setulae (often damaged) on medial surface; segment 3 almost as long as face; arista apparently slightly shorter than segment 3, perhaps slightly damaged apically in all examples; segment 4 visible but extremely reduced; segment 5 separated from segment 6 by membranous ring; segment 6 swollen on basal part, with very inconspicuous pubescence. Palpus of moderate proportions, compressed, setulose; proboscis moderately short and stout; prementum broader than long, with distal margin almost straight.

Thorax stout; mesoscutum almost as broad as long, with many non-seriate setulae; humeral callus with numerous setulae; scutellum rather short, convex, subtriangular but rounded apically; subscutellum small and recessed; mesopleuron, pteropleuron, and sternopleuron finely setulose; prosternum broad, with short setulae and

rudimentary precoxal bridge; metapleural sclerite extending narrowly between hind coxa and abdominal segment 1, but not forming postcoxal bridge. Legs without differentiated bristles, except for the posteroventral series of fore femur; posterior bridge of hind coxa without setulae; mid tibia with one rather short stout apical ventral spur and several stout setulae on each side of it. Wing: venation as in Fig. 4; subcosta not fading distally, meeting costa at acute angle; cell-4 index = 0.76–0.81; membrane, including that of alula, largely microtrichose; pale basal areas of first basal, second basal and anal cells, and zone behind mid-length of anal cell almost bare; squama of moderate size, slightly broader than a semicircle.

Abdomen. Tergites 2 to 5 with numerous, generally distributed small setulae; tergite 2 showing narrow membranous zone along much of posterior margin except at sides; tergite 5 almost as long as tergite 4, without enlarged setulae; at least sternites 1 and 2 with fine setulae. Postabdomen: aedeagus with small terminal tuft of pubescence on stipe; preglans well differentiated from stipe, short, asymmetrical; glans ovoid-cylindrical; bulb short, inconspicuous; paired terminal filaments broadly fused basally, each much shorter than glans.

Dimensions. Total length (abdomen variably flexed) 5.5–7.1 mm; length of thorax 2.7 mm; length of wing 5.9–6.1 mm; length of glans of aedeagus 0.25 mm.

Notes

The male of *D. molens* has a field of short, strong setulae on the dorsomedial surface of antennal segment 2. In both the available specimens there is damage to these setulae which is very unlikely to be the result of collecting or subsequent handling, because this surface of the antennae is less freely exposed than other parts. On the holotype at least eight of these setulae on the right antenna have been snapped off or ground off at or just beyond their bases, while on the left antenna five setulae are similarly damaged. In the paratype about 28 setulae on the right antenna and 26 on the left are damaged, i.e. most of the setulae on this part of the segment. On each antenna the setulae on the rest of the surface of segment 2 are intact.

I have commented on damage to setulae, which appear to be a specialized development on the medial surface of antennal segment 2, in the canacid (or tethinid) *Tethinosoma fulvifrons* Malloch and the platystomatid *Rhytidortalis averni* McAlpine (McAlpine, 2007 [this volume]). I hypothesized that, in these flies of sandy (beach or dune) habitats, the antennae may play a role in digging or extrication from loose sand. I have no information to suggest that any such activity is likely for *Dayomyia*, but the data seem to indicate that some unknown activity of the fly involves abrasion of these setulae.

The specific epithet is a Latin participle, grinding, in reference to the abraded antennal setulae.

Eumeka McAlpine

Eumeka McAlpine, 2001: 145–146. Type species (original designation) *E. hendeli* McAlpine.

Distribution Australia: Queensland. New Guinea. Bismarck Archipelago: Lavongai (or New Hanover). New Caledonia: Grande Terre.

Notes

In my previous treatment of *Eumeka* (McAlpine 2001: table 1) I gave the principal diagnostic characters of the only known New Caledonian species, now described as *E. koghii*.

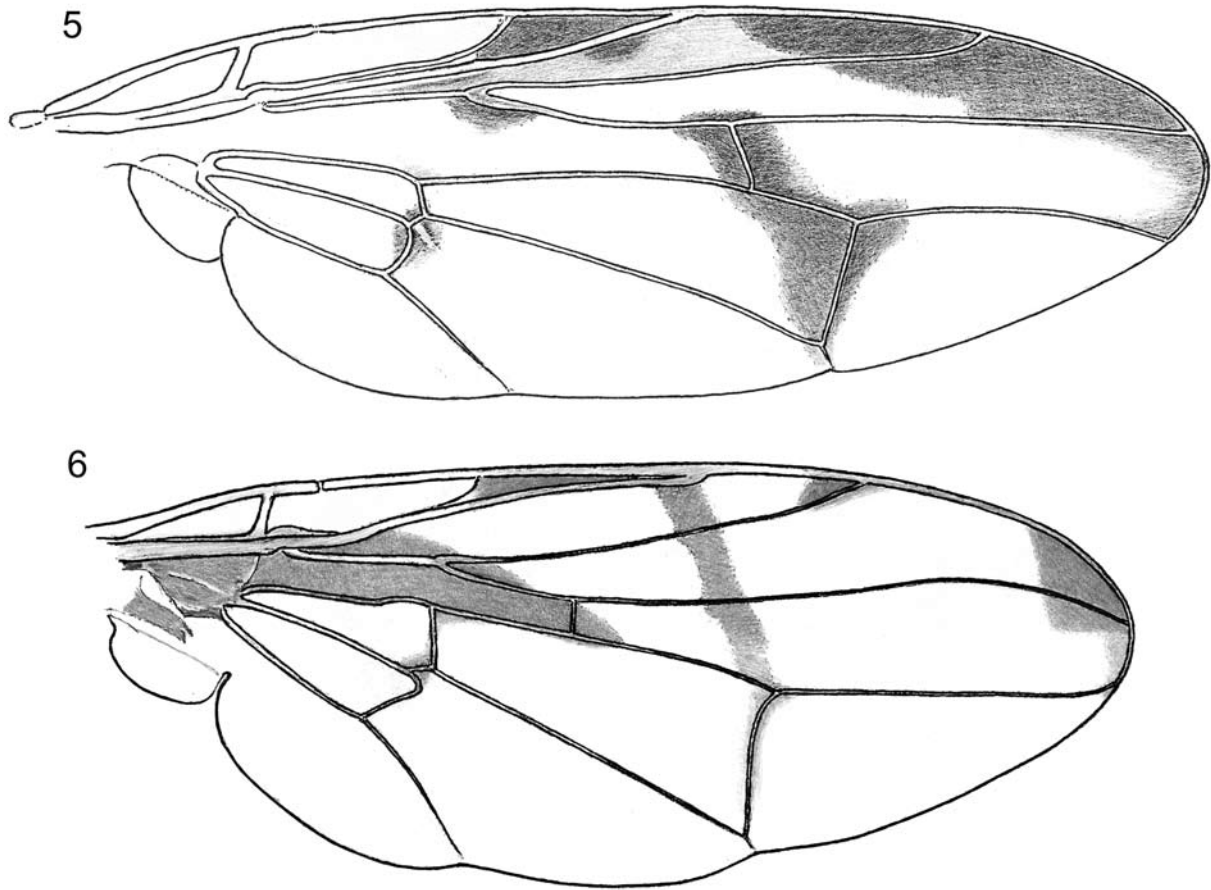
Eumeka koghii n.sp.

Fig. 5

Type. HOLOTYPE ♀ (unique), New Caledonia: Mount Koghi [or Montagnes des Koghis], 600 m, 26–30.i.1963, C.Y., N.L.K., light trap (BPB).

Description. Female (male unknown). Resembling *E. hendeli* McAlpine (see McAlpine, 2001) but smaller.

Coloration. Head with ground-colour largely brown; cheek and lower occiput brownish-tawny; fronto-orbital margin, parafacial, and postgenal region densely silvery-pruinescent; antennal groove more finely and thinly silvery-pruinescent. Palpus brown to tawny-brown. Mesoscutum with blackish ground-colour, becoming brown towards lateral margins, with median silver-grey pruinescent stripe joined to transverse prescutellar pruinescent zone, and with broader lateral pruinescent zone both before and behind transverse suture; humeral callus whitish-pruinescent only towards posterior margin, otherwise shining brown with pale yellowish hairs; scutellum shining blackish, with antero-dorsal zone of thin greyish pruinescence; pleura brown and shining in part; mesopleuron with silvery-pruinescent posterior marginal band narrowed dorsally, ventrally extending broadly across sternopleuron; pleurotergite with silvery-white pubescence-pruinescence. Coxae brown to tawny; fore coxa densely silvery-pruinescent on anterior surface; femora yellow; tibiae and tarsi dark brown to tawny-brown. Wing (Fig. 5) differing from other *Eumeka* spp. in broader brown costal band between veins 1 and 4 and large brown mark enclosing both anterior and discal crossveins; axillary lobe and squama white. Halter with tawny-yellow base and brown capitellum. Abdomen dark brown to tawny brown, largely shining with whitish hairs on tergites 1 and 2, mostly blackish hairs on other tergites; tergite 2 with rather small median whitish-pruinescent zone on posterior margin; tergite 3 with whitish-pruinescent zone on anterior margin which does not extend to lateral margin; tergite 4 with whitish-pruinescent zone on anterior margin, which broadens laterally and extends broadly over whole lateral margin; tergite 5 broadly whitish-pruinescent on lateral margin only; sternite 1 brown, shining, whitish-pruinescent on lateral margin and more narrowly so on posterior margin; sternites 2 and 3 almost entirely whitish-pruinescent; ovipositor sheath dark brown; aculeus yellow.



Figs 5, 6. Wings of signal flies. (5) *Eumeka koghii*. (6) *Pogonortalis monteithi*.

Head of similar shape and proportions to that of *E. hendeli*; facial carina almost flat-topped, depressed near mid-length so that central part is not visible in profile; height of cheek 0.28 of height of eye; fronto-orbital bristles two, reclinate, but posterior one strongly curved outwards; postgenal bristle large; setulae present on parafacial, but those near and just above its mid-height smaller and inconspicuous. Antenna (without arista) slightly shorter than face; arista almost twice as long as rest of antenna; segment 6 with sparse very minute pubescence near base only. Prelabrum moderately developed; its anterior surface almost vertical.

Thorax. Setulae on mesopleuron (perhaps sexually dimorphic) shorter than in either sex of *E. hendeli*, those near posterior margin moderately short, black, moderately thick, those on upper part fine, minute, and pale, those in compact ventral group black, thick and somewhat spinescent; setulae on anterior part of pteropleuron short, rather thick, black; thoracic chaetotaxy as for genus. Legs as for genus; bristles on hind femur rather weak, especially the pale anterior ones on basal half. Wing: vein 1 without ventral setulae; distal section of vein 4 slightly arched, apically slightly diverging from vein 3; cell-4 index = 0.76; first basal cell more extensively microtrichose than in other

Eumeka species, particularly on distal half; alula entirely microtrichose; squama rather narrowly rounded, not at all produced posteriorly (in contrast to *E. hendeli*).

Abdomen rather broad anteriorly, with no tendency towards petiolation; tergite 5 distinctly shorter than tergite 4; aculeus very slender; spiracle 5 apparently situated in pleural membrane below mid-length of tergite 5.

Dimensions. Total length 5.4 mm (abdomen flexed); length of thorax 2.7 mm; length of wing 6.1 mm.

Distribution New Caledonia: mountains in south of Grande Terre.

Notes

From comparison of certain species in the platystomatine genera *Rhytidortalis* Hendel, *Euprosopia* Macquart, and *Pseudocleitamia* Malloch the armature of the mesopleuron seems likely to be sexually dimorphic (see McAlpine, 2000 for *Rhytidortalis*; 1973 for *Euprosopia*; 2001 for *Pseudocleitamia*).

Pogonortalis Hendel

Pogonortalis Hendel, in de Meijere 1911: 370 (footnote).
Type species (monotypy) *Pogonortalis uncinata* de Meijere.

Diagnostic characters for the genus are as given in the above key to genera and the more comprehensive key by McAlpine (2001). In addition, the wing features shown in Fig. 6 are distinctive among New Caledonian flies.

Distribution. Australasian Region: Micronesia—Guam; Australia—southern and eastern parts, including Lord Howe Island and Tasmania (latter a new record—Bruny Island, AM); Norfolk Island; New Caledonia (see below). Oriental Region: Java. Nearctic Region: California (introduced).

Pogonortalis monteithi n.sp.

Fig. 6

Types. HOLOTYPE ♂, New Caledonia: Cap Ndoua site 1, rainforest, 150 m, 22°23'S 166°56'E, 21.xii.2004–8.i.2005, C.J.B., S.G.W., malaise trap (PM). PARATYPE, 1 ♂, Port Boise (Gite Kanua), rainforest, 10 m, 22°21'S 166°58'E, 30.xi.2004–1.xii.2004, C.J.B., S.G.W., J.W. (QM).

Description. Male (female unknown). Rather small to medium-sized dull blackish fly with few black wing markings, of very similar appearance to the familiar Australian *P. doclea* (Walker).

Coloration. Head largely blackish; postfrons tawny-brown anteromedially, with greyish pruinose orbital margins; face pale greyish pruinose on somewhat more than upper half; occiput with grey pruinescence, particularly towards orbital margin and vertex. Antenna: segments 1 and 2 tawny-brown; segment 3 rather dark greyish brown. Prelabrum blackish, sometimes partly tawny; palpus dark greyish brown, with slightly paler apex. Thorax with black ground-colour, largely covered with dark grey to whitish pruinescence; scutellum partly tawny, but with entire dorsal surface covered with grey pruinescence; propleuron with pale-pruinose zone just below spiracle separated from that on posterior margin of coxal foramen. Legs largely dark brown, including fore coxa; segments 1 and 2 of each tarsus yellow, their distal segments tending greyish brown. Wing hyaline, with blackish markings as in Fig. 6. Halter brown, with parts of base and capitellum paler, tawny-brown. Abdominal tergites and sternites black.

Head. Width of postfrons near its mid-length 0.23–0.24 of width of head; height of cheek 0.06–0.08 of height of eye;

lower outline of head capsule not noticeably expanded across cheek regions; single postgenal bristle strongly differentiated from fine postgenal setulae.

Thorax of similar proportions to that of *P. doclea* and related species; scutellum without setulae; the following bristles present (presence of some inferred from position of sockets): scapulars, humeral, 1 + 1 notopleurals, supra-alar, postalar, posterior intra-alar, one dorsocentral, prescutellar acrostichal, two pairs of scutellars, mesopleural. Wing: venation typical of genus; cell-4 index = 0.38–0.39.

Abdomen, in dorsal view, rounded oval, anteriorly narrowed but not prolonged; tergites 2 to 5 with roughened granular surface. Aedeagus very similar to that of *P. doclea* (see Steyskal, 1961) and *P. howei*; distal end of stipe shortly swollen; preglans short, stout, asymmetrical, set off from both stipe and glans by constrictions; glans very shortly ovoid; terminal filaments long, slender, subequal in length, with slightly expanded apices.

Dimensions. Total length 4.4–5.0 mm; length of thorax 1.7–2.0 mm; length of wing 3.6–4.1 mm; length of glans of aedeagus 0.23 mm.

Distribution New Caledonia: southern part of Grande Terre.

Notes

The males of *P. monteithi* differ from those of other known Australasian species of *Pogonortalis* in the absence of broadening of the head capsule and absence of the fascicle of enlarged cheek bristles (see diagrams in McAlpine, 1975). In these respects, even the larger male of *P. monteithi* more closely resembles the females of the other species. *Pogonortalis monteithi* further differs from *P. hians* Schneider and McAlpine in the more restricted wing markings, the more basally located anterior crossvein, and the entirely dull, pruinose dorsal surface of the scutellum. It differs from *P. howei* Paramonov and *P. doclea* (Walker) in having the transverse dark wing stripe from the distal end of vein 1 oblique and meeting vein 4, instead of terminating at vein 3, and in having the whitish-pruinose zone of the propleuron immediately below the spiracle separate from the pruinose zone on the posterior margin of the fore coxal foramen. From *P. howei* it also differs in having antennal segment 3 dark brown, instead of rather bright, deep yellow, in the darker brown fore coxa and femur, and in the absence of a dark blotch at about the basal third of the marginal cell.

The specific epithet refers to Geoffrey B. Monteith, who has encouraged this project and provided much New Caledonian material.

Sors n.gen.**Notes**

Type species *Sors wrightae* n.sp.

Description. Female (male unknown). Small, stout, dark flies; cuticle of head, thorax, and abdomen almost entirely pruinose and non-shining; wing heavily variegated.

Head anteroposteriorly compressed; vertical carina moderately sharp; face without prominent median carina; lower part of occiput convex, c. upper third flat to slightly concave; eye without obvious ommatrichia; the following bristles well developed: inner and outer vertical, upper fronto-orbital, postgenal; ocellar bristles small, hair-like, pale, widely divergent; postvertical bristles small, subparallel or divergent, procurved, inserted well below vertical carina. Antenna moderately short and stout; arista with segment 6 irregularly pubescent on whole length. Prelabrum well developed, broad but shallow; palpus moderately broad.

Thorax. Cuticle with general covering of dense, short, dark microtrichia (typical pruinescence), but with pale markings indicated by distinctly longer, whitish microtrichia standing out in relief; mesoscutum much broader than long, extensively setulose; scutellum broadly rounded in dorsal view, slightly convex dorsally, with thin but not sharp posterior margin, extensively setulose, with sockets of posterior bristles prominent, tilted upwards so that rims form horizontal circles; mesopleuron only slightly convex; the following thoracic bristles present: humeral, 1 + 1 notopleurals, supra-alar, postalar, posterior intra-alar, one dorsocentral, prescutellar acrostichal, three pairs of scutellars, mesopleural; sternopleural bristle absent. Legs moderately short and stout; fore femur with posterodorsal and posteroventral bristles; mid tibia with one large apical ventral spur and no distinct secondary spurs. Wing rather broad; subcosta gradually approaching costa distally; vein 1 with a rather dense dorsal series of setulae from just beyond level of humeral crossvein, without more basal setulae; vein 2 without kink near mid-length; veins 3 and 4 very slightly divergent distally; vein 3 with numerous dorsal setulae; anterior crossvein as long as penultimate section of vein 4 or almost so; discal cell broad, relative to that of *Platystoma* and *Euprosopia*; anal cell obtusely angular posterodistally; squama forming moderately short rounded lobe.

Abdomen. Tergite 5 moderately large; ovipositor sheath short and broad; aculeus slender.

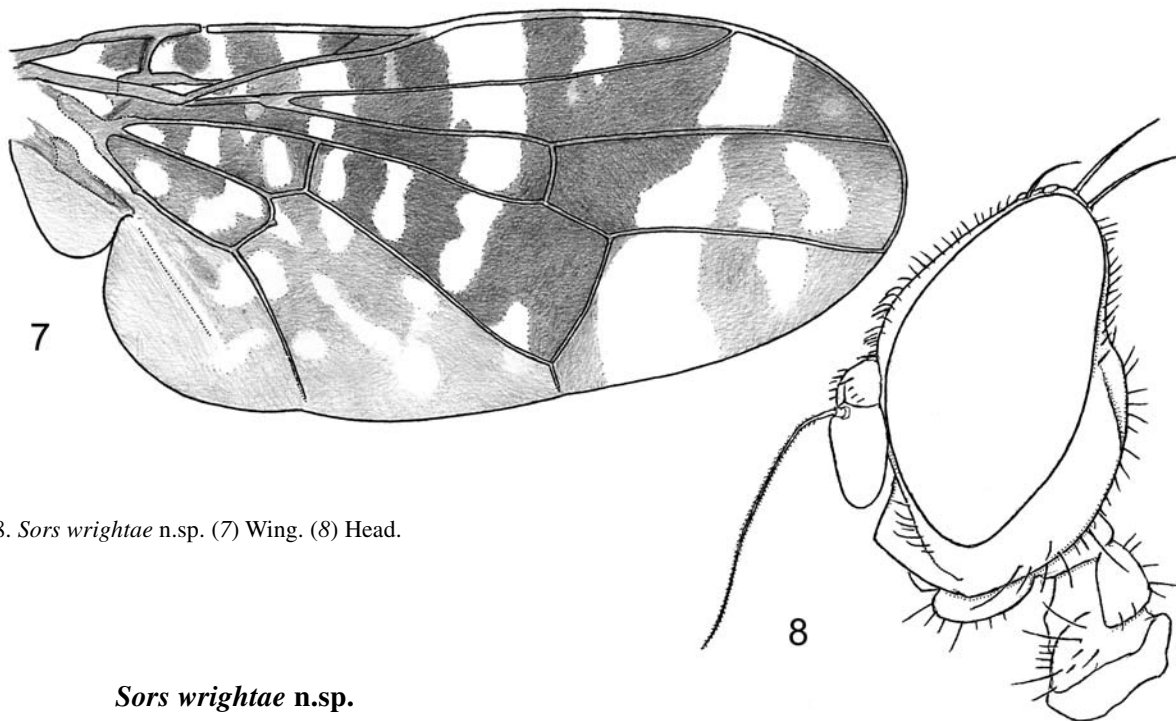
Distribution New Caledonia: only known from southern part of Grande Terre.

Sors resembles *Euthyplatystoma* Hendel (Oriental) and *Platystoma* Meigen (Palearctic). The anteroposteriorly compressed head, slightly but broadly swollen on lower occipital surface, with eye-surface broad, little convex and largely directed forwards, so that the eye appears narrow in profile, is typical of both these genera. The general dense covering of pruinescence on the mesopleuron and some other parts of the thorax is short and dark, but the whitish flecks are the effect of small zones of significantly longer white microtrichia. This condition agrees with *Euthyplatystoma* and *Platystoma*, and is not present in *Euprosopia* Macquart, an Australasian genus of somewhat similar general coloration though not closely related to the other genera mentioned. The relatively short, ovate antennal segment 3 also agrees with these two northern genera, rather than with a majority of Australasian platystomatine genera.

Sors differs from both *Euthyplatystoma* and *Platystoma* in having the anterior crossvein almost as long as the penultimate section of vein 4 (instead of no more than half as long), in having the section of vein 5 on discal cell arched at most only on its basal half (instead of strongly arched for all or most of its length), in having the length of the discal cell (measured along vein 4) c. 2.2× as great as maximum width (instead of more than 3× as long as wide), and in having the prelabrum markedly shallower. In *Sors* the single stout apical ventral spur of the mid tibia disagrees with the condition in *Platystoma* (five available species), which has one or more secondary spurs, but is more like that of *Euthyplatystoma*. It further differs from *Euthyplatystoma* in its much shorter, broader fore coxa, and in having the posterior margin of the scutellum quite thin, instead of thick and rounded.

In the key to genera of Lamprogastrina and Platystomina by Hendel (1914b), *Sors* runs to *Platystoma*, providing that one knows enough of the keyed genera not to be side-tracked at couplets 10 or 19. There is some difficulty at couplet 10, where, on wing venation, it could tend towards the African *Sphenoprosopa* Loew, but it disagrees in head structure and wing pattern (see Hendel 1914a, fig. 271). At couplet 19, *Sors* may be associated through couplet 20 (instead of the more appropriate couplet 24) with 5 genera belonging to the subfamily Scholastinae, on account of having the mesoscutum much broader than long. In contrast to these genera, *Sors* has a large female tergite 5, no strong gibbosity on the upper part of the mesopleuron, and a much more restricted geno-parafacial area.

The generic name is a Latin noun, *sors* (genitive *sortis*) meaning (among other things) a kind or sort, and is feminine.



Figs 7, 8. *Sors wrightae* n.sp. (7) Wing. (8) Head.

***Sors wrightae* n.sp.**

Figs 7, 8

Types. HOLOTYPE ♀, New Caledonia: Mount Dzumac Road, 700 m, 22°03'S 166°28'E, 31.x.2001–1.xi.2001, G.B.M. (PM). PARATYPES: 1 ♀, same data as holotype (AM); 1 ♀, Forêt Nord, site 2, rainforest, 200 m, 22°19'S 166°55'E, 2–3.xii.2004, C.J.B., S.G.W. (QM); 1 ♀, Port Boise (Gite Kanua), rainforest, 22°21'S 166°58'E, 30.xi.2004–1.xii.2004, C.J.B., S.G.W., J.W. (QM).

Description. Female.

Coloration. Postfrons largely dull brown, with yellow setulae and black bristles; some small whitish-pruinose spots along frontal orbits; geno-parafacial orbit narrowly yellowish-pruinose; face largely blackish, with upper part extensively whitish-pruinose and much of lower margin yellow; occipital region with blackish ground-colour, covered to varying extent with white to greyish pruinoscence. Antenna tawny-yellow with brown suffusions. Prelabrum brown; palpus dark grey-brown with tawny-yellow apex. Thorax with blackish ground colour and general covering of dark pruinoscence; small whitish-pruinose spots and streaks present on humeral callus, mesoscutum, scutellum, propleuron, and mesopleuron. Legs largely brown-black; tarsal segments 2 to 5 pale yellow; each claw bicoloured, yellow basally, blackish apically. Wing membrane hyaline with extensive heavy brown-black to paler brown blotching, the blotches irregularly coalescing in parts; anterior and discal crossveins enclosed in a large irregular dark zone extending from costa to vein 5; squama creamy-white. Halter tawny-brown basally, with capitellum largely creamy-yellow. Abdominal tergites dull brown to brown-black, without pale markings; ovipositor sheath shining tawny-brown; aculeus yellow.

Head. Width of postfrons near its mid-length c. 0.35 of width of head; height of cheek c. 0.13 of height of eye; narrowest distance between antennal sockets c. 0.2 of width of one socket.

Thorax. Length of mesoscutum c. 0.83 of width; mesopleuron and anterior part of pteropleuron with numerous moderate-sized setulae, latter also with three or four very long pale yellow setulae. Legs: fore tarsus stout, slightly shorter than fore tibia. Wing: cell-4 index = 0.78–0.80; anal crossvein thickened at point of maximum curvature.

Abdomen. Tergites 3 and 4 subequal in size; tergite 5 slightly shorter and narrower; tergite 6 reduced, apparently desclerotized; sternites 1 to 5 compact, well sclerotized; sternite 6 very short and broad; spiracle 5 located in membrane near middle of lateral margin of tergite 5.

Dimensions. Total length 3.4–3.9 mm; length of thorax 1.7–2.0 mm; length of wing 3.3–3.6 mm.

Distribution As for genus.

Notes

The specific epithet refers to Susan G. Wright of the Queensland Museum, who obtained material of this and other interesting platystomatids in New Caledonia.

Naupoda Osten Sacken

Naupoda Osten Sacken 1881: 135. Type species (monotypy)
N. platessa Osten Sacken.

Description (main diagnostic features only). Hairs (rays) on arista (antennal segment 6) all short and non-seriate, or absent; mesoscutum much wider than long; scutellum with only two or three pairs of bristles, all restricted to posterior half of its length or less; mesopleuron largely shining, with pruinescence-pubescence restricted to anteroventral part or absent; sternopleural bristle weakly differentiated from adjacent setulae or absent; mid femur without ventral spines; length of first section of vein 4 more than 0.7 of length of discal cell measured along vein 4; second section of vein 5 usually longer than anal crossvein; squama large; female: abdomen with large tergite 3, tergites 4 and 5 vestigial, often desclerotized; male: aedeagus with complex sclerotized glans, without hollow terminal filaments.

Distribution Australasian Region: New Guinea, Australia (including Lord Howe Island), Solomon Archipelago, New

Caledonia. Oriental Region: Philippines, Sumatra (e.g., *N. imitans* de Meijere), but some species recorded from other countries probably not referable to genus (see McAlpine, 2001). Afrotropical Region: widely distributed in African tropics, Madagascar. New Caledonia apparently represents the eastern limit of the range of the genus, as the Fijian record is an error.

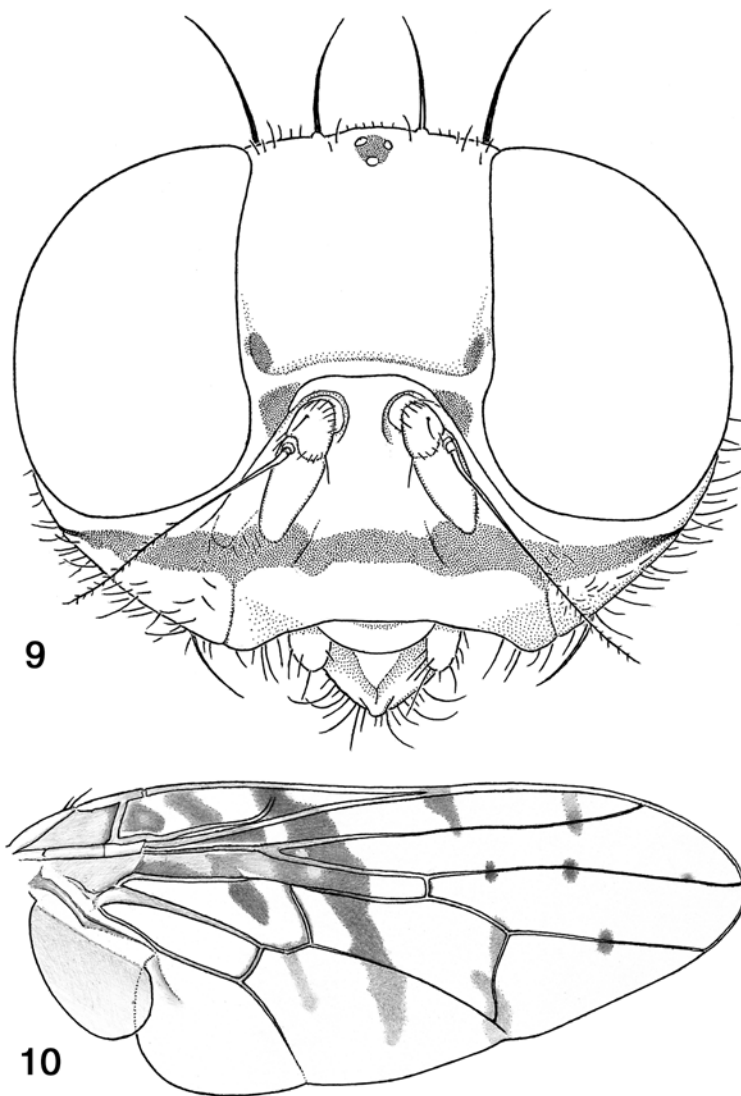
Notes

Naupoda is a diverse and widely distributed genus, and has perhaps not been adequately defined as a monophyletic taxon. The subgenus *Gonga* McAlpine, 2001, which contains exclusively the known Australasian species, is distinguished as given by McAlpine (2001: table 3), except that the fronto-orbital bristle is not always distinct.

The following key to species is preliminary, as it is based on the limited material at present on hand. *Naupoda* "sp. 1" is an apparently undescribed species from the East Sepik and Central Provinces of Papua New Guinea (AM).

Key to Australasian species of *Naupoda*

- 1 Arista (or antennal segment 6) bare, except for pubescence near base; anteroventral quarter of mesopleuron covered with dense white pubescence; length of discal cell less than 0.8 of length of second basal cell, both measured along vein 4; Lord Howe Island *nudiseta* (Bezzi)
- Arista with many short hairs or pubescence on distal half or more; anteroventral quarter of mesopleuron almost bare, shining black; discal cell c. as long as second basal cell or slightly longer 2
- 2 Anterior margin of postfrons with yellow transverse rounded ridge extending from eye to eye; facial region with horizontal black stripe extending from cheek to cheek; central region of mesoscutum very broadly tawny-orange; New Caledonia *burwelli* n.sp.
- Anterior margin of postfrons without transverse ridge; facial region without horizontal dark stripe; mesoscutum black on central part 3
- 3 Humeral callus without obvious yellow mark; anal cell with substantial bare zone, hyaline except at basal and distal extremities; New Guinea sp. 1
- Humeral callus with large pale yellow mark; anal cell entirely microtrichose, either extensively suffused with brown, or with brown spot near or just beyond mid-length 4
- 4 Mesopleuron almost entirely blackish; humeral callus with additional small yellow mark on upper margin; second basal and anal cells partly hyaline on basal halves; New Guinea and eastern Australia *regina* Hendel
- Mesopleuron with horizontal yellow stripe; humeral callus with lower yellow mark only; second basal and anal cells brown on at least basal halves; Solomon Archipelago *ventralis* Curran



Figs 9, 10. *Naupoda burwelli*. (9) Head. (10) Wing.

***Naupoda (Gonga) burwelli* n.sp.**

Figs 9, 10

Type. HOLOTYPE ♀ (unique), New Caledonia: Pic du Pin site 1, rainforest, 280 m, 22°15'S 166°49'E, 25.xi.2004–23.xii.2004, C.J.B., S.G.W. (PM).

Description. Female (male unknown).

Coloration. Head predominantly tawny to tawny-yellow; postfrons with four small darker marks, blackish ocellar spot, and pale yellow anterior margin; parafacial with grey-brown spot near upper extremity; blackish horizontal stripe crossing face at about lower third and extending on to central cheek region; occiput with broad blackish zone on upper part. Antenna orange-tawny; arista largely brown. Prelabrum and palpus tawny-yellow. Mesoscutum and scutellum predominantly tawny-orange, with brown to blackish markings; humeral callus yellow, with large

dark brown central zone; thoracic pleura brown-black, with two pale yellow marks on mesopleuron and smaller tawny marks on pteropleuron and hypopleuron. Legs predominantly tawny-yellow; all coxae partly brown; mid and hind femora with some longitudinal brown streaks; hind tibia with small anterior and posterior brown marks at c. basal third, and with larger blackish anterior and posterior subapical marks; tarsi pale yellow. Wing hyaline, with brown markings as in Fig. 10; subapical part of subcostal cell opaque yellow; alula faintly browned; axillary lobe and squama grey. Halter creamy-white. Abdominal tergite 1+2 tawny-orange to brownish; tergite 3 shining blackish with some tawny suffusion; pleural membrane of segments 1 to 3 grey-brown, that of segments 4 to 6 (judging from position of sternites) creamy-white, the two zones quite sharply contrasted; a narrow transverse blackish stripe within pale zone behind tergite 3 apparently covering the minute tergite 4, and, between this and segment 7, a pair of black dorsal spots (doubtfully associated with vestiges of tergite 5 or 6); ovipositor sheath and aculeus tawny.

Head c. 1.4× as wide as high; width of postfrons near mid-length 0.35× width of head; height of cheek 0.31 of height of eye; anterior margin of postfrons forming a somewhat prominent rounded ridge extending from eye to eye; face with pair of relatively deep antennal grooves, separated by a prominent, rounded median carina more complete than in other species of *Gonga*; the following cephalic bristles well developed: inner and outer vertical, postgenal; fronto-orbital bristle indistinctly differentiated from adjacent setulae. Antenna slightly longer than half height of face; segment 5 asymmetrical, very short, but longer than segment 4; segment 6 with very short hairs, mainly on distal half and basal extremity. Prelabrum moderately small, not attenuated medially.

Thorax. Length of mesoscutum 0.78 of its width; length of scutellum 0.42 of length of mesoscutum; the following bristles present: rather small humeral, 1+1 notopleurals, postalar, rather large posterior intra-alar, quite small dorsocentral, prescutellar acrostichal, two pairs of scutellars, mesopleural, very small but distinguishable sternopleural. Legs: fore femur with numerous short posteroventral bristles; mid tibia with one rather large apical ventral spur. Wing: distal quarter of basal section of vein 4 abruptly attenuated, only slightly curved; second section of vein 5 longer than anal crossvein, bent near mid-length; anal crossvein only slightly oblique, slightly curved; length of discal cell 1.3× that of second basal cell, both measured along vein 4; cell-4 index = 0.63; both second basal and anal cells with extensive bare zones.

Abdomen. Tergite 2 with posterior margin produced into slight median prominence; tergite 3 large and quadrate; tergite 4 apparently represented by minute sclerite within black band; sternites 1 to 3 well developed but progressively smaller in that sequence; sternites 4 to 6 distinct but much smaller.

Dimensions. Total length 4.8 mm; length of thorax 2.7 mm; length of wing 5.5 mm.

Distribution New Caledonia: southern part of Grande Terre.

Notes

Though close to other species of subgenus *Gonga*, *N. burwelli* is quite distinct in both morphology and colour pattern. It is the only species with a transverse ridge on the anterior margin of the postfrons, and an associated feature is the less strongly and narrowly arched ptilinal fissure immediately below this ridge. The discal cell is longer in proportion to the second basal cell than in any other species, and the extensive bare zones (i.e. without microtrichia on either surface) in the second basal and anal cells differentiate it from most species. The most readily appreciated features of colour pattern are the horizontal blackish stripe across the facial region and the extensively tawny-orange thoracic dorsum.

The specific epithet refers to Christopher J. Burwell who collected much interesting material for this project.

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